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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/564,598

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EXAMINER

RAEVIS, ROBERT R

ART UNIT

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2856

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/564,598	Applicant(s) HUMPHRIS ET AL.	
	Examiner Robert R. Raevis	Art Unit 2856	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 April 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6,8-23,25-29 and 31-33 is/are pending in the application.
- 4a) Of the above claim(s) 2,3,20,22,23,25,32 and 33 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4-6,8-19,21,26-29,31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claims 16,28,26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hough et al.

As to claim 16, Hough et al teach (Figure 2) an AFM including: driving means 20,22,24 to provide relative scanning motion between a probe 12,14 and sample 18 surface 16, and capable of bringing the sample and probe into close proximity; a probe detection mechanism 26,28 to measure deflection; and force generating means 24 arranged such that a force is applied to the sample, the force being directed so as to urge the sample towards the probe.

Hough does not refer to Q.

As to claim 16, the probe has a Q, and not all probes have identical Qs. It would have been obvious to employ the system with probes having different Q's as the reference is silent as to whether the system would operate with only a probe having a maximum Q.

As to claim 28, note (Para 8) piezo element 30 that provides for oscillation.

As to claim 26, note the particle 32 that will affect damping.

As to p. 14, last paragraph of **REMARKS**, Hough does teach driving means 10,22,24. The material on Para 52 exists, but does not undo Hough's driving means 10,22,24 in any way.

Claims 6,1,4,5,8,9,13,14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shirakawabe et al, in view of either Hough et al or Minne.

Shirakawabe et al teach (Para 34; Figure 1) an AFM including: probe with force sensing member 11 connected to a tip 11a, the tip including a coating on the tip 11a that is biased via magnetic field to induce sample/tip contact that is indicated by current flow between the sample and tip. When contact is initially made, the probe ceases to deflect, but the magnetic field results in a greater force between the tip and sample beyond that which induces initial contact 11, naturally employs a level of force that is barely greater than that necessary for that initial contact.

Shirakawabe does not describe tip dimensions, and does not refer to Q

As to claims 6,1,4,5,8, either Hough et al (Para 44) of Minne (col. 2, lines 40-50) teach use of tips smaller than 100 nm to allow for accurate measuring in AFMs, suggestive of such dimensions in Shirakawabe. In addition, the probe has a Q, and not all probes have identical Qs. It would have been obvious to employ the system with probes having different Q's as the reference is silent as to whether the system would operate with only a probe having a maximum Q.

As to claims 9,13, the cantilever inherently dampens, and is a dampening element, and also has a coating on it.

As to claim 14, note the driving means 13 and detector 15.

As to p. 15, last paragraph of **REMARKS**, the coating is on the tip, and the coating is influenced by the magnetic "force".

Claims 16,17,18,19,26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shirakawabe et al.

As to claim 16, Shirakawabe et al teach a microscope, including: driving means 13; and probe detection mechanism 15; wherein a magnetic force between the sample and tip exists such that a force is applied to the probe to urge the probe and sample together, the force due to magnetic material coated on the tip 11a. The claim is limited to the structure defined in the body of the claim.

Shirakawabe does not describe tip dimensions, and does not refer to Q.

As to claims 16, the probe has a Q, and not all probes have identical Qs. It would have been obvious to employ the system with probes having different Q's as the reference is silent as to whether the system would operate with only a probe having a maximum Q.

As to claims 17,18, the magnetic force must be just greater than the amount absolutely necessary for contact to both assure contact and permit current flow.

As to claim 19, the constant claimed is in the range commonly employed in microscopes.

As to claim 26, cantilevers inherently have damping.

Claims 1,4,5,6,8,13,14,15,16,17,18,19,21,26,28,29,31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hong et al.

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Hong et al teach (Figure 1a,1b) an oscillating AFM including: probe having a tip 132 with 50 nm radius (col. 11, lines 14-18), the probe responsive to an electrostatic force (ABSTRACT), which force does not effect beam deflection after contact is made.

Hong does not refer to q , quality factor.

As to claims 6,1,8,13,16,29, the probe has a Q , and not all probes have identical Q s. It would have been obvious to employ the system with probes having different Q 's as the reference is silent as to whether the system would operate with only a probe having a maximum Q .

As to claims 4,5, note voltage source 122,118, and conductive portion 164.

As to claim 14,16, note the driving means 152, detector 138, in Figure 1a.

As to claims 15,28, Hong employs an oscillating mode.

As to claims 16,17,18,21,29, note the drive scanner 110 and detector 138.

As to claim 29, Hong's oscillating element dissipates energy.

As to claim 19, the constant claimed is in the range commonly employed in microscopes.

As to claim 26, cantilevers inherently have damping. As to claims 31, Hong employs an oscillating mode.

Claims 9,10,11,12,27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hong et al as applied against claims 8,26, and further in view of Erie et al.

As to claims 9,10,11,12,27, Erie teaches (col. 6, lines 42-62) use of polymeric coatings for cantilevers requiring reflective surfaces for proper measuring with optics.

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Use of “polymers” is suggestive of trying any known polymer, as Erie is silent as to any specific polymers.

Non-elected claims include: 2,3,20,22,23,32,33.

As to the **REMARKS**, use of a “low quality factor” is difficult to deal with as there is no clear reference (for “low”) in the claims. There may not even be a reference in the written specification. After all, there are many probes in the microscopy art, and they all have different Q factors. That is practically unavoidable due to natural variances. Of all those many probes certainly one has the highest Q, with all the remaining probes having a low Q factor relative there to. Isn't there any other way to describe this in a meaningful manner? It is note that Applicant related Q to “critically damped” (Para 53), but relates that level to “sufficiently low” (Para 53), which does not mean that “low” is limited to that which at least provides for critical damping.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert R. Raevis whose telephone number is 571-272-2204. The examiner can normally be reached on Monday to Friday from 5:30am to 3pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams, can be reached on 571-272-2204. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Robert R. Raevis/

Primary Examiner, Art Unit 2856